Reducing the contaminations in *in vitro* primary culture of *Hevea* from greenhouse mother plants

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Abstract

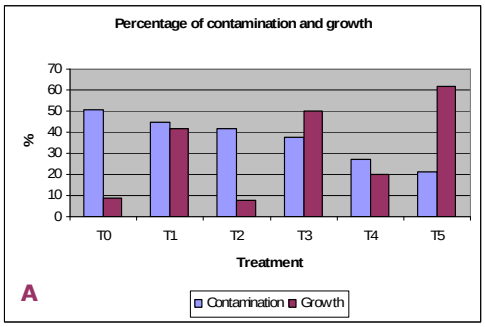
Microcutting is one of *in vitro* propagations of plants and has been developed by Cirad for rubber (*Hevea brasiliensis*) using seedlings as source of explants. Rubber plants produced through microcutting develop taproot and lateral root system in the field, so this technique has a great potential in propagation of rootstocks. The implementation of microcutting technique for *Hevea* propagation in tropical countries, such as Indonesia, depends on the success to overcome some constraints, especially high level of contamination in the primary culture stage due to growing mother plants in the greenhouse. Several experiments related to washing solutions in pre-sterilization step and culture closure tubes were conducted to overcome this problems. Reducing the contaminations level by using the best result of this experiments are presented.
[Keyword: *Hevea*, microcutting, primary culture, contamination]

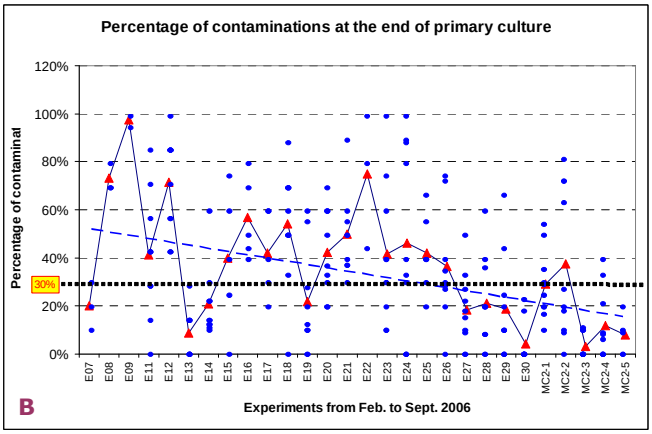
Introduction

Rubber plants are propagated for commercial purpose by budding scion clones to seedling rootstocks. Currently, it is possible to create rubber rootstocks clones by using microcutting technology (Carron et al., 2000; 2007). A major problem to implement this technology is fungal contamination which is greatly reduces the survival and shoot proliferation of the explants. Furthermore, loss of cultures cause the cost of production increase. The objective of the research was to reduce the level of contamination, as a first challenge, during *Hevea* microcutting process to produce good and healthy plantlets.

Materials & Methods

Hevea seedling genotypes were used as source of explants and 6 combination related to washing solution and culture closer tubes were compared, T0: aganol, parafilm, T1: aganol, cotton, T2: alcohol, parafilm, T3: alcohol, cotton, T4: desogerme, parafilm, and T5: desogerme, cotton. Each treatment were repeated twice with total 1.646 explants. By using 2.722 explants, introduced from February to September 2006, the percentage of contamination at the end of primary culture were calculated.





Results & Discussion

Reducing the level of contamination and increasing the growth of explants reached by using T5 (Desogerme - quaternary alkyl chloride and poly-iminobiguanidide salts- as washing solution and cotton as closure tubes) (A). By applying the results, the level of contamination at the end of primary culture could be decreased, from 52% to 23%, below the acceptable limit (30%) (B), and the healthy plantlets could be produced (C). Similar level of contamination at *Hevea* primary culture step was reported by Enjalric *et al.* (1988).

Conclusion

The use of desogerme and cotton closure tubes at primary culture reduced the contamination level and increased the explants growth. Therefore, the first challenge to implement microcutting technology for clonal propagation of rubber rootstock has been overcome.

References

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